## Claims

1. 1. A method for coating a medical device comprising depositing inorganic ions and a bioactive agent on the device in a reactor, wherein inorganic ions are deposited from a stream of a coating solution passing through said reactor, which reactor is provided with at least one partition to retain the bioactive agent in the reactor.

2. A method according to claim 1 wherein said inorganic ions are chosen from the group of calcium ions, magnesium ions, sodium ions, phosphate ions, carbonate ions, chloride ions and hydroxide ions.

3. A method according to claim 1 or 2, wherein said partition has a low permeability towards said bioactive agent and a high permeability towards the coating solution.

4. A method according to claim 3, wherein said partition is a molecular weight cut-off membrane.

5. A method according to claims 1-4, wherein said medical device has been coated with an initial layer of inorganic material.

6. A method according to claims 1-5, wherein after coating the medical device, said medical device is contacted with an acidic aqueous solution to redissolve inorganic salts of the coating and to obtain a coating of bioactive agent.

7. A method according to any of the preceding claims, wherein said coating solution comprises 0.5 to 10 mM calcium ions, 0.5 to 6 mM phosphate ions, 0 to 1 mM magnesium ions, 0 to 0.5 mM sodium ions, 0 to 0.5 mM chloride ions, 0 to 5 mM carbonates and HEPES and/or Tris in a total concentration between 0 and 100 mM .

8. A method according to any of the preceding claims, wherein the medical device is a metallic, organic, polymeric, or ceramic medical implant.

9. A method according to any of the preceding claims, wherein said bioactive agent is a peptide, a polypeptide, a protein or a combination thereof.

10. A method according to any claims 1-8, wherein said bioactive agent is an antibiotic agent, a growth factor or growth hormone, a bone reinforcing protein, a cell adhesion factor, autologous serum, a vitamin or a combination of said compounds.

11. A method according to claim 9 or 10, wherein said bioactive agent is selected from the group of tobramycin, vancomycin, albumin, casein, gelatin, lysosime, fibronectin, fibrin, chitosan, polylysine, polyalanine, polycysteine, Bone Morphogenetic Protein (BMP), Epidermal Growth Factor (EGF), Fibroblast Growth Factor (bFGF), Nerve Growth Factor (NGF), Bone Derived Growth Factor (BDGF), Transforming Growth Factor-β1 (TGF-β1), Tranforming Growth Factor-β (TGF-β), the tri-peptide arginine-glycine-aspartic acid (RGD), vitamin D3, dexamethasone, human Growth Hormone (hGH) or a combination of said compounds.

12. A method according to any of the preceding claims, wherein said bioactive agent is present in the reactor vessel in an initial concentration of 0.01 to 10,000 mg/l.

13. A medical device comprising a coating obtained by a method according to any of the claims 1-12.

14. A medical device according to claim 13, wherein the total coating has a thickness of about 0.5 to about 100 microns.

15. A medical device according to claim 13 or 14 that is sterile.

16. A reactor for coating a medical device for use in a method of any of the preceding claims.

17. A reactor for coating a medical device according claim 16, comprising a reactor vessel to hold a medical device and bioactive agent, having an inlet and outlet for coating solution and a partition at said outlet to retain bioactive agent.

18. A reactor for coating a medical device according claim 17, wherein said reactor vessel comprises a partition for retaining bioactive agent at the inlet for coating solution.

19. A reactor for coating a medical device according to claim 17 or 18, wherein said reactor comprises a stirring system.

20. A reactor for coating a medical device according to any of the claims 17-19, wherein said reactor vessel comprises an inlet for adding bioactive agents.

21. A reactor for coating medical a device according to any of the claims 17-20, wherein said reactor comprises a system for heating and/or cooling.

22. A reactor for coating a medical device according any of the claims 17-21, comprising a container for coating solution connected to the reactor vessel, a pump for transporting coating solution from said container via an inlet for coating solution through said reactor vessel and wherein the outlet for coating solution of the reactor vessel is connected to said container.

23. A reactor according to any of the claims 17-22, wherein said reactor comprises several reactor vessels in parallel.

24. A reactor according to any of the claims 17-23, wherein said reactor comprises an instrument for determining the thickness of the coating on an implant during the coating process.

25. A reactor according to claim 24, wherein the instrument for determining the thickness of the coating on an implant during the coating process, comprises two electrodes between which the conductivity can be measured, wherein upon at least one electrode, a coating can be deposited and wherein the thickness of the coating on the implant can be determined as a function of the conductivity between the two electrodes.

26. A method for determining the thickness of a coating on an implant during the coating process of the implant with a conductivity detector having at least two electrodes, wherein upon at least one of the electrodes a coating is formed during the coating process of the implant, wherein the conductivity

between the two electrodes is measured as a function time and wherein the thickness of the coating on the implant can be determined as a function of the conductivity between the two electrodes.

The use of a reactor for coating a medical device according to claim 16-25.